

Getting

Started

CREATIVE SOUND BLASTER PRO PACKAGE

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- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

FCC ID : IBACT-SBP2P

CAUTION

To comply with the limits for the Class B digital device, pursuant to Part 15 of the FCC Rules, this card must be installed in computer equipment certified to comply with the Class B limits. All cables used to connect the computer and peripherals must be shielded and grounded. Operation with non-certified computers or non-shielded cables may result in interference to radio or television reception.

MODIFICATIONS

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

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Introduction

Welcome to the multimedia bandwagon. With Creative Sound Blaster Pro Package, you can upgrade your PC to a Multimedia PC that fully involves your sense of sight and sound. What's more, you no longer have to put up with the shroud of silence that has surrounded your PC for so many years.

This guide is arranged as follows:

- Chapter 1, "Before You Start"**
Describes a list of system requirements and where to get technical support and the latest information.
- Chapter 2, "Sound Blaster Pro Card Setup"**
Instructions for installing the card, testing the card and configuration.
- Chapter 3, "Connection Of Devices"**
Instructions for connecting the joystick to the card
- Chapter 4, "Sound Blaster Pro Software Installation"**
Instructions for installing Sound Blaster Pro software.
- Chapter 5, "Windows 3.1 Applications"**
Instructions for adding the audio drivers.
- Appendices**
Topics covered include installation problems, I/O addresses and pin connection, connecting an internal speaker to the Sound Blaster Pro card and hardware specifications.

Chapter 1 Before You Start

The best way to avoid problems created by software or hardware conflict is to read the information in this guide and follow the installation and setup instructions.

***Important:** This manual assumes a certain degree of computer knowledge and understanding of DOS. Refer to your DOS manual for instructions on making backup copies, making or changing directories and other DOS operations.*

Latest Information

The **Readme** file on the Sound Blaster Pro Disk #1 contains the latest information and changes not available during the printing of this manual. Please read the file before you continue. To view the file, insert the diskette in your disk drive and enter **README**.

System Requirements

The system requirements are:

- IBM AT 286, 386, 486, PS/2 (models 25/30), Tandy AT or 100% compatible.
- EGA or VGA graphic card (VGA recommended).
- 2.5 MB of hard disk space for Sound Blaster Pro software.

***Note:** Except for MMPLAY which requires VGA, Sound Blaster software runs on EGA card.*

Technical Support

We are committed to giving our customers the best product possible as well as excellent technical support. If you need technical help, you can call the following number:

Within USA, Canada and South America:

CREATIVE LABS, INC.

Technical Support (USA)

1901 McCarthy Boulevard, Milpitas CA 95035

Telephone : (408) 428 6622

Fax : (408) 428 6633

Outside USA, Canada and South America, you can contact our distributor in your country or you can contact us at:

CREATIVE TECHNOLOGY LTD

Technical Support (Singapore)

67 Ayer Rajah Crescent #03-18 Singapore 0513

Telephone : (65) 870 0433

Fax : (65) 773 0353

Before calling, you may like to refer to "Quick Help For Installation" in the *Appendix* of this guide for installation problems or the *Appendix* in Sound Blaster Pro User Reference Manual for application problems.

Have the following information available when you call:

- Make a note of any unresolved IRQ, DMA and I/O conflicts.
- Check that external connections to the Sound Blaster Pro card are correct.
- Check the volume of the card is set at mid-range.
- If the software you are using has a sound on/off feature, make sure it is set to on.
- If the problem still persists, write down exactly what have occurred. This should include the name and version of the software used, computer configuration, error message and the exact nature of the problem.

If you write to us, include these information in your letter or fax. Feel free to write us with any questions, concerns or suggestions.

Disk Backup

If you have not already made a backup copy of your original floppy disk, do so before beginning the installation. Store your original diskette in a safe place.

Chapter 2 Sound Blaster Pro Card Setup

Installing the sound card on your computer is simple and easy. However, please follow the instructions carefully.

Installing Sound Blaster Pro Card

To install the card:

1. Turn off the computer and remove all power.
2. If you have a game card or a card with a joystick port already installed, either remove it or disable the joystick port on the Sound Blaster Pro card by removing jumper JP4 (see Figure 1).
3. Remove the cover and install the card into any free 16-bit slot.
4. Restore power to the computer.
5. Adjust the volume of the card to mid-range.
6. Connect speakers or headphones to the card (see Figure 5).

Caution: The built-in stereo power amplifier has a maximum output power of four watts per channel with four-ohm speaker and two watts per channel with eight-ohm speaker. Do not play at maximum volume if your speaker cannot handle this power.

Testing Sound Blaster Pro Card

Before you proceed, you should test whether Sound Blaster Pro card is working.

To test it:

1. Insert Sound Blaster Pro Disk #1 in your floppy drive A: or B: and from the DOS prompt, enter **TEST-SBP**.
2. Follow the instructions on the screen.

TEST-SBP tests the Sound Blaster Pro's basic hardware configuration: I/O address, interrupt and DMA channel. The program identifies the current hardware configuration and then displays a menu to let you test both the sound and music output.

The test program detects the current hardware configuration by accessing the card at the possible locations in a predetermine order. Sometimes, there may be a conflict in one of the locations and this may stop the test program. To avoid this problem, you can enter **TEST-SBP /M**. The optional /M switch sets the test for manual selection. The test program will prompt you to select the hardware configuration that matches the setting of the card.

If the test program reports an error on one of the settings, it indicates a hardware conflict between Sound Blaster Pro and another hardware card. To resolve the conflict, change the hardware configuration of the other adaptor card or the Sound Blaster Pro card.

We strongly suggest you avoid changing the factory default setting of the Sound Blaster Pro because many software default to this address.

Changing Hardware Configurations

For those who wish to change the settings, switch off the computer and remove the Sound Blaster Pro card. To locate the jumpers, refer to Figure 1.

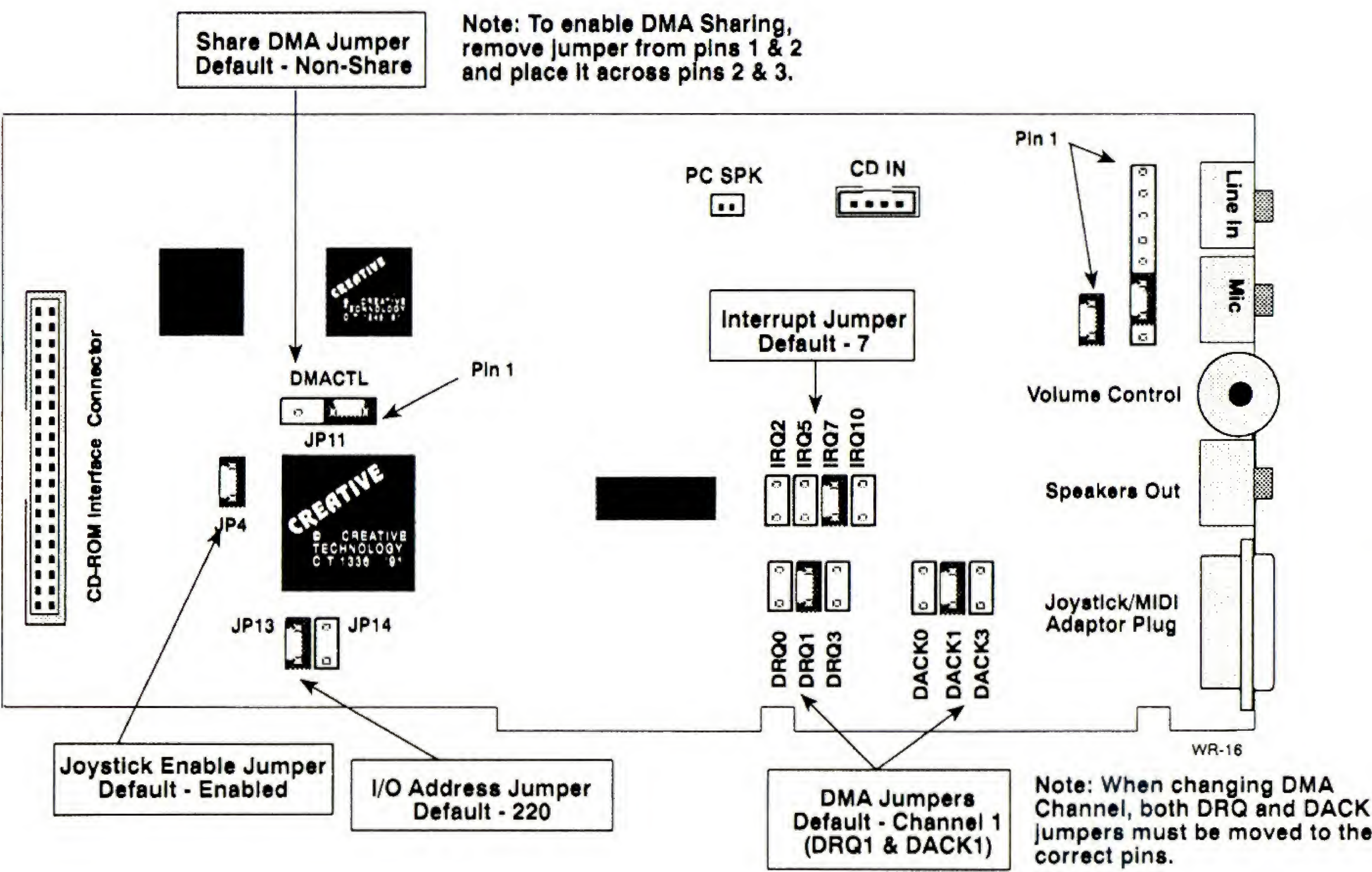


Figure 1: Jumper Locations and Settings

I/O address

Only two I/O addresses are available: 220 Hex (default) and 240 Hex. Place the jumper on the pins of the desired address as shown in Figure 2.

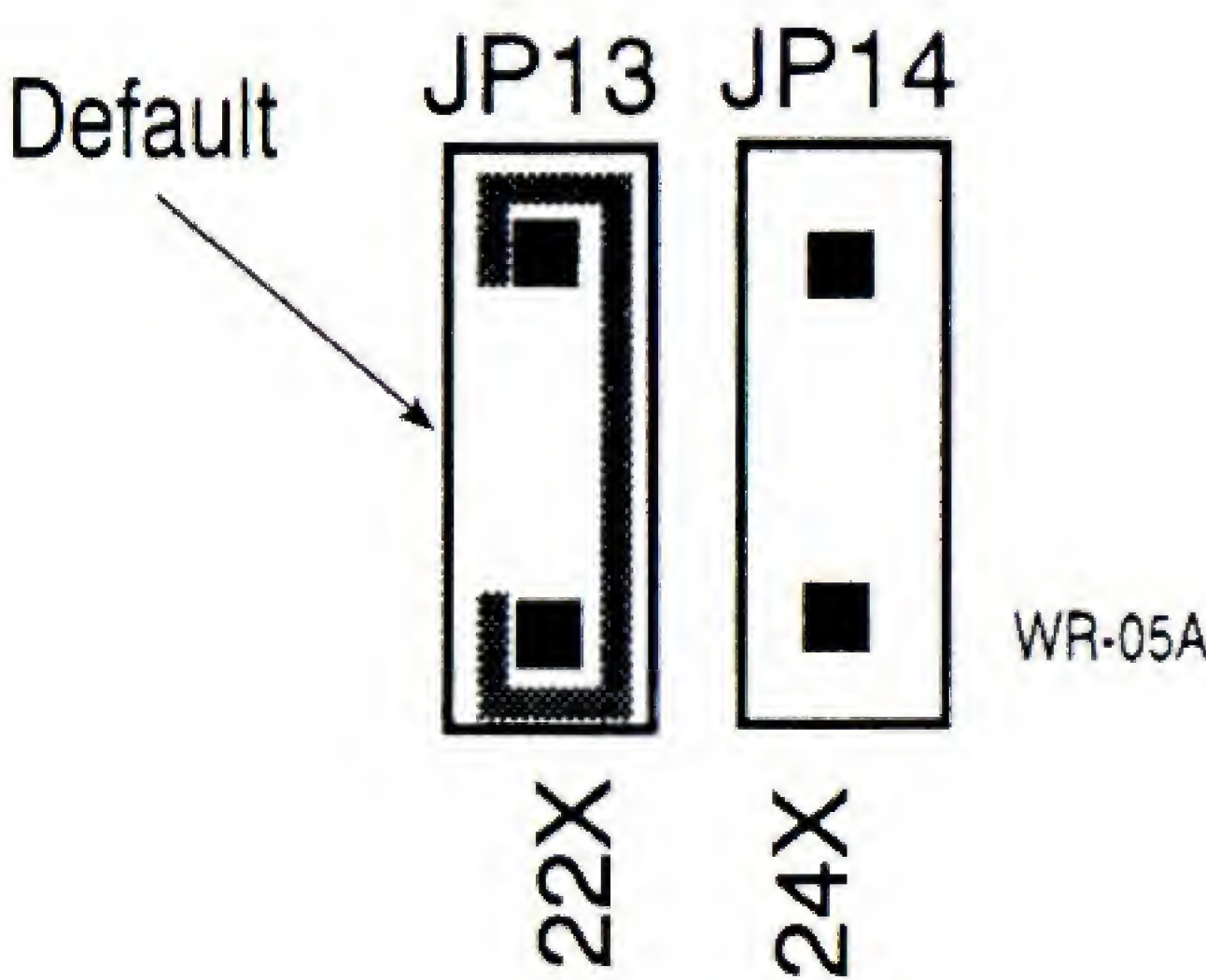


Figure 2: I/O Setting

Interrupt Line

The interrupt line has four possible choices: 2, 5, 7 (default) and 10. Place the jumper on the pins of the desired interrupt line as shown in Figure 3.

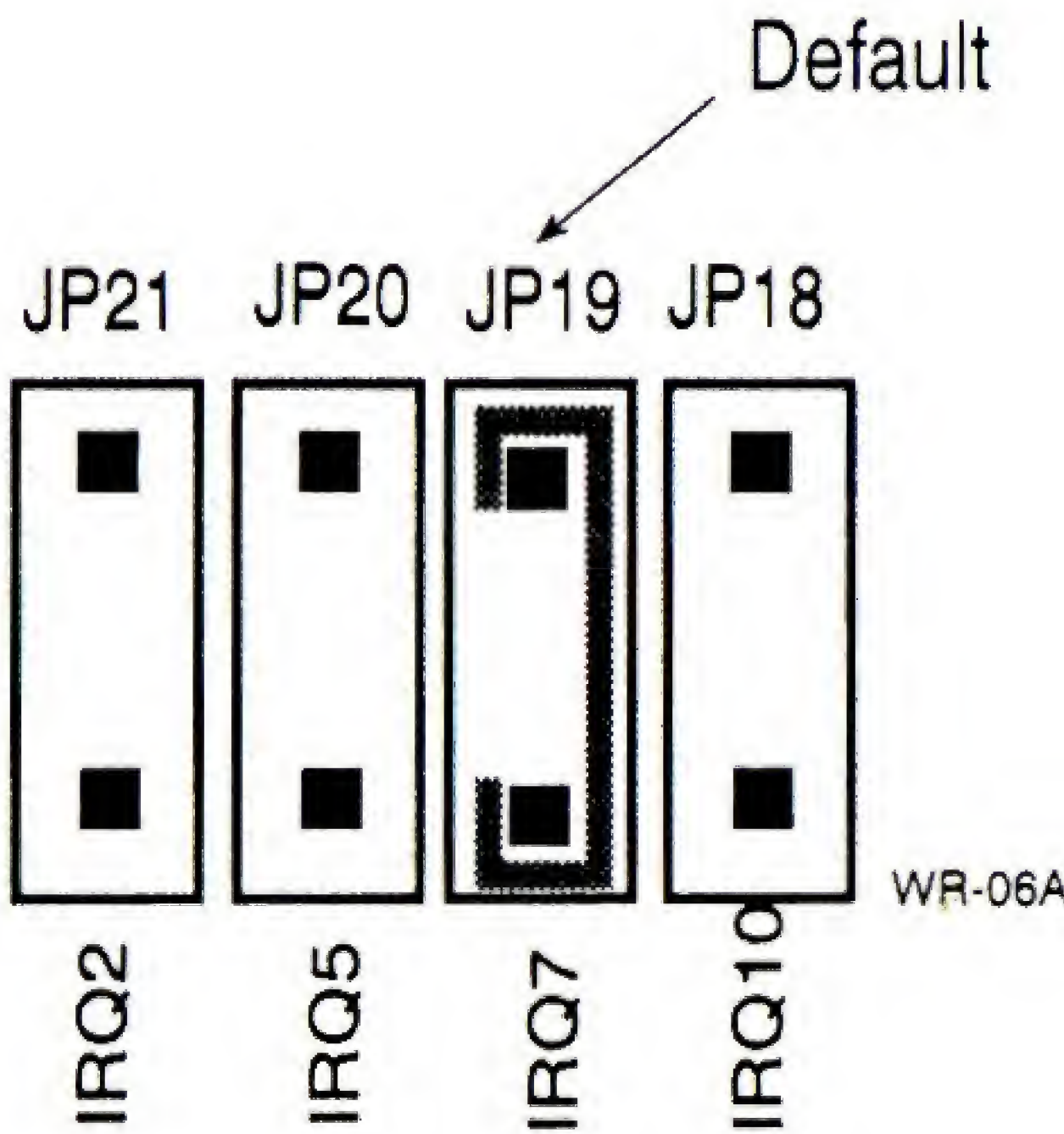


Figure 3: Interrupt Setting

DMA Channel

There are three DMA channels available: 0, 1 (default) and 3. The DACK jumper must have the same setting as the DRQ jumper. Figure 4 shows the factory default of DMA channel 1.

The pins are used to select the DMA channel for Sound Blaster Pro. Sound Blaster Pro card is capable of sharing the DMA channel with another adaptor card. The factory default is non-sharing (see Figure 4). To enable DMA sharing, remove the jumper from pins 1 and 2 and place it across pins 2 and 3.

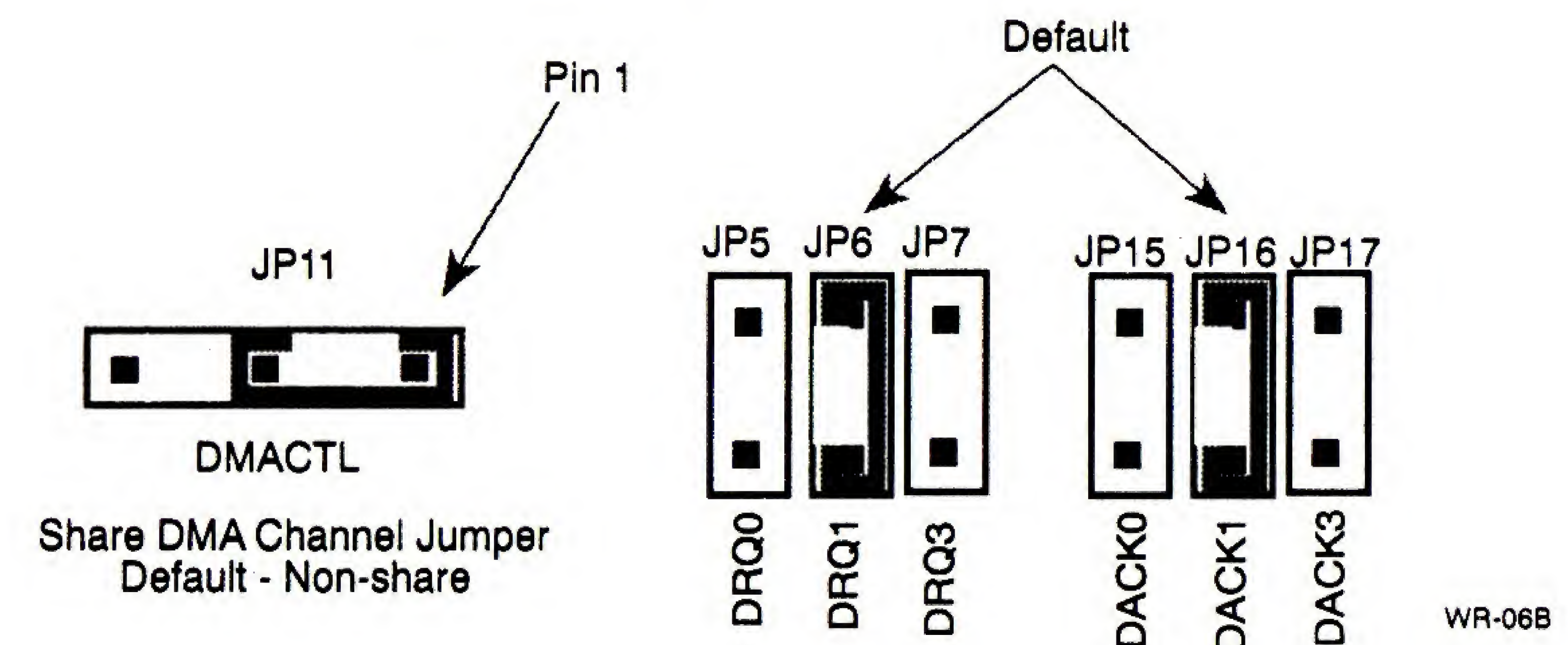


Figure 4: DMA Channel Setting

Chapter 3 Connection Of Devices

To connect devices like the microphone to the card, see Figure 5 for the connection of the various devices. (Since these devices do not come in standard packaging, your package may not contain them.) However, there are a few simple rules you need to follow:

- Make sure the devices are plugged into the correct jack.
- Do not set the volume level at maximum if your speakers cannot handle the power output of Sound Blaster Pro. Sound Blaster Pro generates four watts on a four-ohm speaker and two watts on a eight-ohm speaker.
- Use a good quality microphone. Generally, a microphone that costs around US\$30.00 is suitable. A condenser microphone also works well.

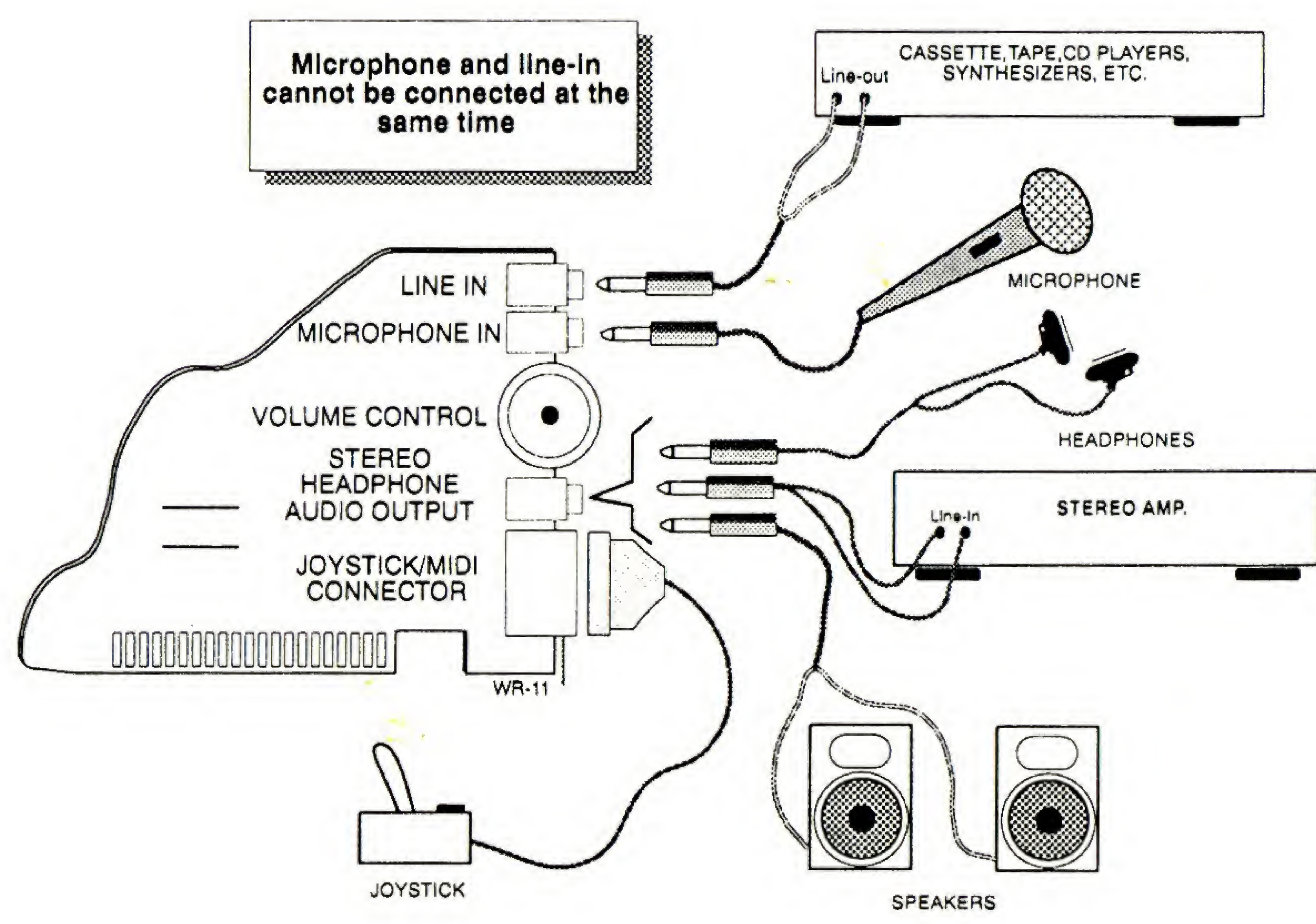


Figure 5: Conneting Other Devices To The Card

Joystick/MIDI Port

The joystick port on the Sound Blaster Pro is identical to that on a standard PC game control adaptor or game I/O port. You can connect any analog joystick with a 15-pin D-sub connector. It supports all standard PC joystick compatible software. Remember, if your PC already has a game card or port, either remove it or disable the game port on the Sound Blaster Pro by removing jumper **JP4**. Disabling the joystick port does not affect its use as a MIDI port.

If you need to run two joysticks (see Figure 6), a joystick splitter Y-cable is available from Creative Labs. Using Y-cables obtained from other sources may not work. The dual joystick port and MIDI port takes up only one slot in your PC, leaving room for other cards.

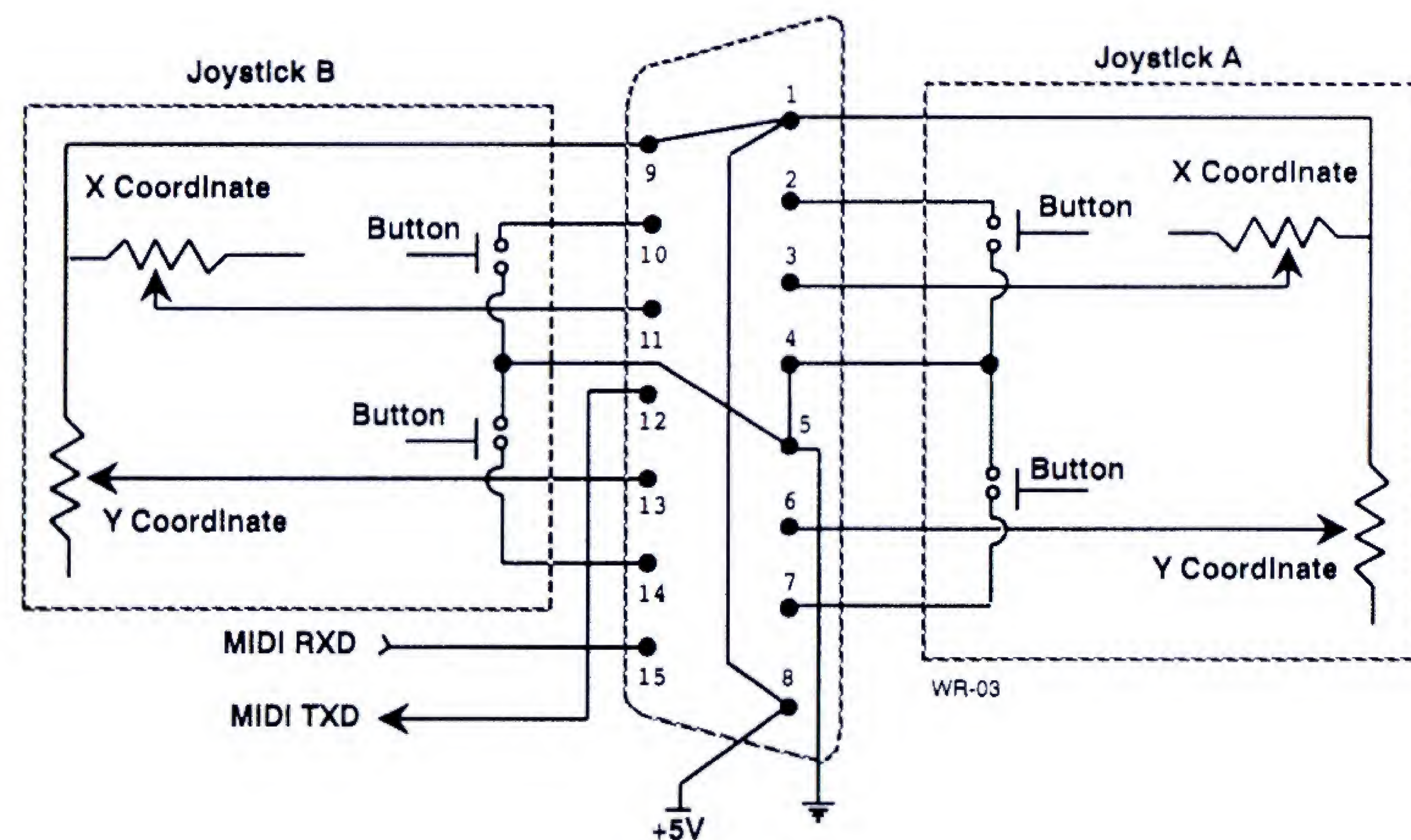


Figure 6: Joystick Schematic Diagram

MIDI Kit

To access the MIDI function requires the optional MIDI Kit. The MIDI Kit contains a MIDI adaptor with a joystick port so that you can use both the joystick and the MIDI instrument.

The MIDI Kit alone does not complete the list for a MIDI setup. You still need the software. The FM Intelligent Organ bundled with this package supports the MIDI keyboard. You can play the computer keyboard or the MIDI keyboard. Ask your dealer or call us for the latest information on MIDI software for the Sound Blaster Pro.

CD-ROM Drive

Sound Blaster Pro has a built-in CD-ROM drive interface that can be connected to a Matsushita CR-521. Detailed installation instructions and the necessary cables are provided when you purchase the CD-ROM drive from Creative Labs or their dealers.

Chapter 4 Sound Blaster Pro Software Installation

Several software packages are bundled with your Sound Blaster Pro card. For a detailed description of the features of the software bundled, refer to Sound Blaster Pro User Reference Manual.

Important: The software for Sound Blaster Pro is distributed in compressed format. You need a hard disk with a minimum of 2.5 MB of free space to install the software.

To install Sound Blaster Pro software:

- Insert Sound Blaster Pro Disk #1 in your floppy drive.
- Change to the floppy drive prompt A: or B:.
- Type **INST-HD C:** and press **Enter**.

*Note: The installation procedures outlined above install the software on the C: drive (hard disk). If you want to install it on another hard disk, D: for example, type **INST-HD D:** and press **Enter**. The procedures also create the SBPRO directory and several subdirectories automatically.*

Chapter 5 Windows 3.1 Applications

In the installation process described below, we assume you have a certain degree of knowledge on using Microsoft Windows 3.1 and the terminology used. If you are new to the software, refer to the manual on Windows 3.1. Also, Windows 3.1 must be installed before adding the audio drivers.

Adding Audio Drivers

To add Sound Blaster Pro audio drivers, follow these steps:

- Start Windows by typing **WIN** and press **Enter**.
- Run Drivers applet under Control Panel. (You can locate the Control Panel in the Main group.)
- Select **ADD**.
- Select **Unlisted or Updated Driver** from the List of Drivers List box and choose **OK**.
- When it prompts you for the drive and path, key it in the text box and choose **OK**. For example, if Sound Blaster Pro software is installed in the \SBPRO directory of the C: drive, key **C:\SBPRO\WIN31** in the text box.
- Select the driver to be added. (The three drivers that need to be added are Creative Sound Blaster Pro 2 MIDI Synthesizer, Creative Sound Blaster Pro Auxiliary and Creative Sound Blaster Pro Wave and MIDI Audio.)
- When prompted to restart Windows, ignore the message. (You only restart Windows when all the three drivers have been added.)
- Restart Windows once you have added the last driver.

Appendix A General Specifications

New FM music voices

- New FM OPL3 music chips using four operators.
- Frequency Modulation sound generation for sounds.
- Compatible with previous OPL2 version which has nine melodies and five percussion sounds supported by numerous games and entertainment software. In addition, OPL3 has 15 melodies using two operators and five percussion sounds, or six melodies using four operators and three melodies using two operators and five percussion sounds.
- Eight selectable waveforms.

Stereo digitized voice channel (2 x 8 bit DAC)

- Provides output of sound—speech, special effects, animal sounds, thunderstorm—that can be easily reproduced on these stereo DAC channels.

Programmable sampling rate

- 4 kHz to 44.1 kHz - mono
- 11 kHz and 22.05 kHz - stereo

DAC transfer modes:

- Direct mode - direct single byte transfer by CPU
- DMA mode - no CPU intervention/overhead required

Compression schemes:

- 8-bit data, no compression
- 2 to 1 compression: 4-bit ADPCM, hardware decompression
- 3 to 1 compression: 2.6-bit ADPCM, hardware decompression
- 4 to 1 compression: 2-bit ADPCM, hardware decompression

Built-in Digital/Analog Mixer

- Software programmable digital/analog mixer
- Mixes the following inputs with digital volume control (log scale):
 - Stereo DAC - 8 levels
 - FM Music - 8 levels with steering
 - CD-Audio - 8 levels
 - Line-In - 8 levels
 - Microphone - 4 levels
 - Master Volume - 8 levels

to "Changing Hardware Configuration" in this guide.
Remove all the non-essential adaptor cards in the system one at a time and repeat the test procedure. If the detection of the hardware card coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the I/O address of either card.

- Problem:** Interrupt cannot be detected
Error found on interrupt setting
- Cause:** The interrupt address of the card conflicts with the interrupt of the other adaptor cards.
- Solution:** Factory default is interrupt 7. The next best selection is interrupt 5.
Remove all the non-essential adaptor cards in the system one at a time and repeat the test on the various interrupt. If the detection of the interrupt coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the interrupt of either card.

Below is a list of Interrupt for your reference

| Interrupt | Description |
|-----------|--|
| IRQ 0 | Used by System Timer |
| IRQ 1 | Used by Keyboard |
| IRQ 2 | Used by second interrupt controller. Free if no other adaptors or software are using it. |
| IRQ 3 | Free or used by COM Port 2 |
| IRQ 4 | Used by COM Port 1 |
| IRQ 5 | Free |
| IRQ 6 | Used by Diskette Controller |
| IRQ 7 | Default used by Sound Blaster Pro |
| IRQ 10 | Free |

- Problem:** DMA cannot be detected
Error found on DMA setting
- Cause:** The DMA channel on the card conflicts with the DMA of the other adaptor cards.
- Solution:** Factory default is at DMA channel 1.
Remove all the non-essential adaptor cards in the system one at a time and repeat the test on the various DMA channel. If the detection of DMA coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the DMA channel of either card.

Below is a list of DMA channel for your reference.

| DMA Channel | Description |
|---------------|-----------------------------|
| DMA Channel 0 | Free |
| DMA Channel 1 | Default |
| DMA Channel 2 | Used by Diskette Controller |
| DMA Channel 3 | Free |

Problems With Sound Output

The following describes some of the problems, causes and solutions:

- Problem:** Background static noise from the speakers..
- Cause:** Too much noise from the computer power supply.
- Solution:** The noise is picked up and amplified to an audible level when the power amplifier is set at a high volume. The only remedy is to lower the level of the volume. If a louder volume is desired, try to amplify the sound output using an external amplifier.
- Problem:** No sound can be heard
- Cause:** Connection problem or the volume is not adjusted to an audible level.
- Solution:** Check that the speaker is connected to the speaker output connector and the volume is at mid range. (Refer to Figure 5 for the correct connection.) If the speaker is battery-powered, make sure that the power is turned on.

Problems With Joystick

The following describe some of the problems, causes and solutins:

- Problem:

Joystick port is not working.
- Cause:

Sound Blaster Pro’s joystick port conflicts with the existing joystick port in the system.
- Solution:

Remove the Joystick Enable jumper. Use the joystick port in your system.

Note: Removing Joystick Enable jumper will not remove the MIDI function of the card. The MIDI pins are still active on Sound Blaster Pro’s joystick port.

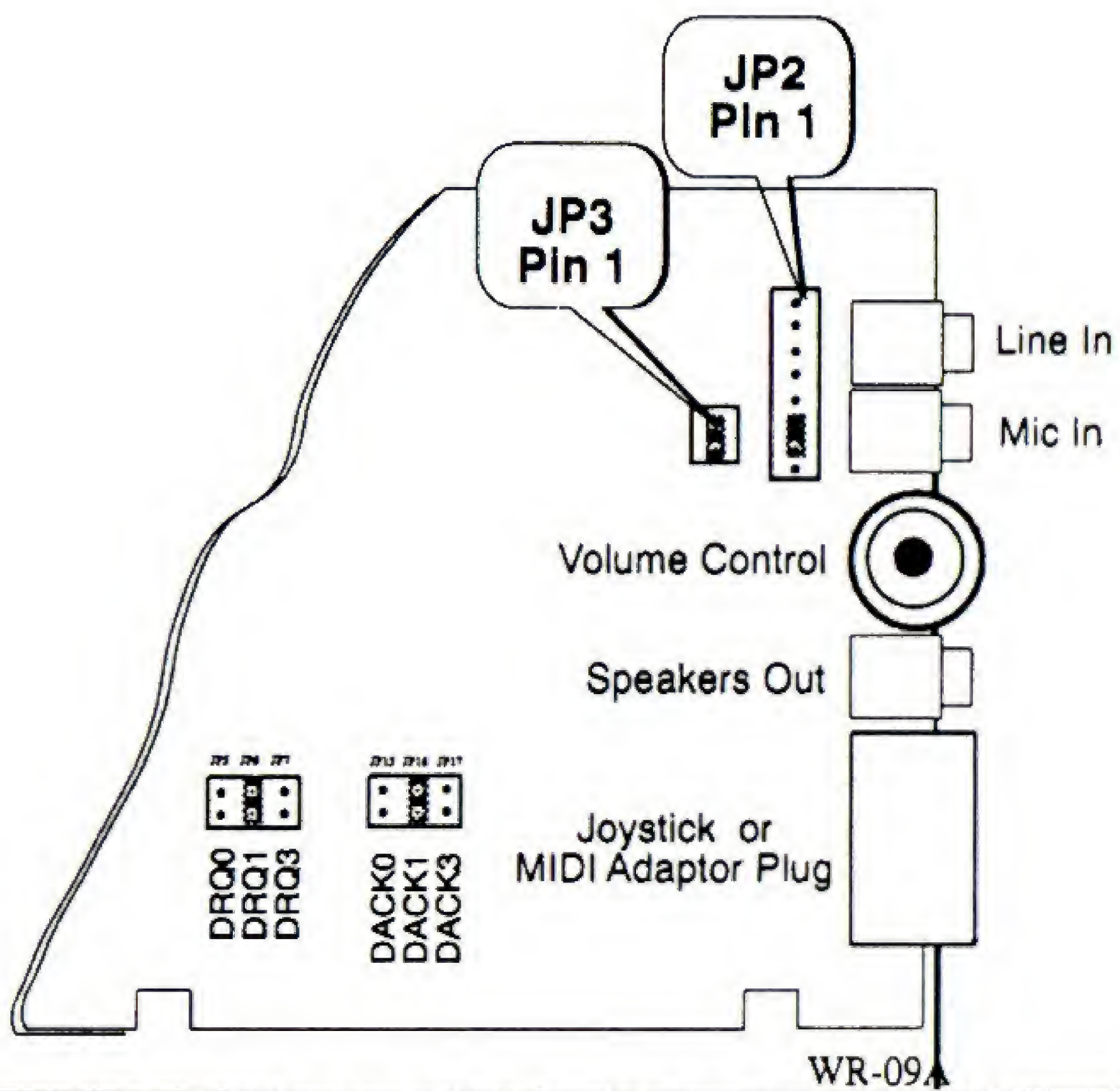
- Problem:

Joystick is not working properly in some programs
- Cause:

This is a classic problem with programs that use CPU timing to calculate joystick position. When the CPU is very fast, the program may not be able to determine the joystick position correctly because the program assumes the joystick position is out of its acceptable range.
- Solution:

A possible solution is to lower the speed of the computer.

Audio Extension Pin Assignments



| Connector JP2 | |
|---------------|---|
| Pin | Description |
| 1 | MICR - Mic input, right channel. Input ranges from 0.004 to 0.7 V rms. |
| 2 | MICGEN - Mic input ground. |
| 3 | MICL - Mic input left channel. Input ranges from 0.004 to 0.7 V rms. |
| 4 | SPKGND - Speaker output ground. |
| 5 | SPKR - Speaker output right channel. Maximum output voltage is 3 V rms at 4 ohms. |
| 6 | SPKL - Speaker output left channel. Maximum output voltage is 3 V rms at 4 ohms. |
| 7 | SPKRL - Speaker output return signal for left channel. |
| 8 | SPKRR - Speaker output return signal for right channel. |

| Connector JP3 | |
|---------------|---|
| Pin | Description |
| 1 | SPKR - Speaker output Right Channel. Maximum output voltage is 3 V rms at 4 ohms. |
| 2 | SPKRR - Speaker output return signal for right channel. |

Appendix C Quick Help For Installation

This appendix offers some quick help solutions for users who have encountered some difficulties during the installation of Sound Blaster Pro card. If the problems still cannot be resolved, please contact our Technical Support.

Problems With Sound Blaster Pro Card Installation

Most of the problems encountered during the installation of the Sound Blaster Pro card are due to hardware conflict that can be detected with TEST-SBP. Each adaptor card may contend for various CPU resources.

The three possible sources of hardware conflicts are:

- I/O address conflict
- IRQ (Interrupt Request) lines conflict
- DMA channel conflict

For adaptor cards like the scanner card, network card, diskette copier and SCSI card, they use IRQ and DMA . You may like to remove these card temporarily to see whether Sound Blaster Pro card is working . After that, try to resolve the conflict between these cards by changing the jumper setting described in this guide.

For Sound Blaster Pro, it uses:

- I/O address: Jumper selectable at 220H to 23FH or 240H to 25FH. The default base address is 220H. FM music chip also uses address 388H to 39FH. Joystick port uses the standard address of 200H to 207H.
- Interrupt line (for voice/MIDI operation): Jumper selectable at IRQ 2, IRQ 5, IRQ 7 and IRQ 10. The default setting is at IRQ 7.
- DMA Channel: Jumper selectable at Channel 0, Channel 1 and Channel 3. The factory default is at Channel 1.

The following describe some of the possible problems, causes and solutions:

- Problem:** Hardware card cannot be detected
Error found on I/O Address setting
- Cause:** The I/O address setting of the card conflicts with the setting of the other adaptor cards.

- Solution:** The possibility of an I/O address is minimal. To resolve the conflict, change the current I/O setting to another one. Refer to "Changing Hardware Configuration" in this guide.
- Remove all the non-essential adaptor cards in the system one at a time and repeat the test procedure. If the detection of the hardware card coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the I/O address of either card.

- Problem:** Interrupt cannot be detected
Error found on interrupt setting
- Cause:** The interrupt address of the card conflicts with the interrupt of the other adaptor cards.
- Solution:** Factory default is interrupt 7. The next best selection is interrupt 5.
- Remove all the non-essential adaptor cards in the system one at a time and repeat the test on the various interrupt. If the detection of the interrupt coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the interrupt of either card.

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| IRQ 3 | Free or (COM Port 2) |
| IRQ 4 | Used as COM Port 1 |
| IRQ 5 | Free |
| IRQ 6 | Used by Diskette Controller |
| IRQ 7 | Default used by Sound Blaster Pro |
| IRQ 10 | Free |

- Problem:** DMA cannot be detected
Error found on DMA setting
- Cause:** The DMA channel on the card conflicts with the DMA of the other adaptor cards.
- Solution:** Factory default is at DMA channel 1.
Remove all the non-essential adaptor cards in the system one at a time and repeat the test on the various DMA channel. If the detection of DMA coincides with the removal of any adaptor cards, it means that adaptor card conflicts with Sound Blaster Pro card. Change the DMA channel of either card.

Below is a list of DMA channel for your reference.

| DMA Channel | Description |
|---------------|-----------------------------|
| DMA Channel 0 | Free |
| DMA Channel 1 | Default |
| DMA Channel 2 | Used by Diskette Controller |
| DMA Channel 3 | |

Problems With Sound Output

The following describes some of the problems, causes and solutions:

- Problem:** Background static noise from the speakers..
- Cause:** Too much noise from the computer power supply.
- Solution:** The noise is picked up and amplified to an audible level when the power amplifier is set at a high volume. The only remedy is to lower the level of the volume. If a louder volume is desired, try to amplify the sound output using an external amplifier.
- Problem:** No sound can be heard
- Cause:** Connection problem or the volume is not adjusted to an audible level.

- Solution:** Check that the speaker is connected to the speaker output connector and the volume is at mid range. (Refer to Figure 5 for the correct connection.) If the speaker is battery-powered, make sure that the power is turned on.

Problems With Joystick

The following describe some of the problems, causes and solutions:

- Problem:** Joystick port is not working.
- Cause:** Sound Blaster Pro's joystick port conflicts with the existing joystick port in the system.
- Solution:** Remove the Joystick Enable jumper. Use the joystick port in your system.

Note: Removing Joystick Enable jumper will not remove the MIDI function of the card. The MIDI pins are still active on Sound Blaster Pro's joystick port.

- Problem:** Joystick is not working properly in some programs
- Cause:** This is a classic problem with programs that use CPU timing to calculate joystick position. When the CPU is very fast, the program may not be able to determine the joystick position correctly because the program assumes the joystick position is out of its acceptable range.
- Solution:** The possible solution is to switch the computer to its lowest possible speed.

Appendix D Internal Speaker Connection

It is possible to connect the internal PC speaker to the Sound Blaster Pro. However, due to the variations of internal PC speaker connection found on different systems, you may need an experienced PC technician to complete this procedure or you may want to seek the help of your local computer dealer. The procedures for the technician are:

1. Locate the speaker connection on the motherboard.
2. Remove the speaker connection from the motherboard.
3. From the motherboard, connect a wire from the +5Vdc pin of the speaker connector to pin 1 of jumper JP1 on the Sound Blaster Pro.
5. Connect another wire from the Data out pin of the motherboard speaker connector to pin 2 of jumper JP1 on the Sound Blaster Pro.
6. You will need to provide your own suitable connecting wires and sockets.

Caution *DO NOT ATTEMPT TO FIX THE CONNECTION YOURSELF IF YOU ARE NOT SURE OR ELSE YOU MIGHT DAMAGE YOUR PC OR THE SOUND BLASTER PRO. CREATIVE LABS, INC. OR THEIR DISTRIBUTORS WILL NOT BE LIABLE FOR SUCH DAMAGES.*

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